

# Michael Cooke

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## Education

- 2005–2008 **Ph.D. Experimental Particle Physics, Rice University, Houston, TX.**  
Thesis:  $WW$  production cross section measurement and limits on anomalous trilinear gauge couplings at  $\sqrt{s} = 1.96$  TeV (Advisor: Marjorie Corcoran)
- 2001–2005 **M.S. Experimental Particle Physics, Rice University, Houston, TX.**  
Thesis: Operation and efficiency of the DØ central track trigger
- 1997–2001 **B.S. Physics, Carnegie-Mellon University, Pittsburgh, PA.**  
Graduated with Honors

## Publications & Proceedings

- 2009 "Measurement of the  $WW$  Production Cross Section with Dilepton Final States in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$  TeV and Limits on Anomalous Trilinear Gauge Couplings," Phys. Rev. Lett. 103, 191801
- 2009 "Combined measurements of anomalous charged trilinear gauge-boson couplings from diboson production in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV," Fermilab-Pub-09/380-E
- 2009 "Diboson Production at the Tevatron," Proc. of XVII Int. Workshop on Deep-Inelastic Scattering and Related Topics, Madrid, Spain, April 2009
- 2006 "Limits on anomalous trilinear gauge couplings from  $WW \rightarrow e^+e^-$ ,  $WW \rightarrow e^\pm\mu^\mp$ , and  $WW \rightarrow \mu^+\mu^-$  events from  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV," Phys. Rev. D 74, 057101
- 2004 "The DØ Central Track Trigger," J. Olsen for the DØ CTT Group, IEEE Trans. Nucl. Sci. 51, 345

## Honors & Awards

- 2009 Honored as a finalist for the 2009 Fermilab Director's Award for Exceptional Volunteer Service to Fermilab K-12 Education Programs
- 2008 Received Wilson Award from Rice University for most outstanding thesis in the Physics & Astronomy Department
- 2001 Awarded College Honors and University Honors upon graduation from Carnegie-Mellon University for scholastic and undergraduate research achievements
- 2001 Accepted into *Sigma Xi*, The Scientific Research Society, as an associate member for undergraduate research achievements

## Leadership Experience

- 2010–Present Dean of the *University of DØ*, a lecture series offered to the DØ Collaboration, primarily targeting graduate students and postdocs, focused on topics relevant to a modern hadron collider physicist

- 2009–Present Co-convener of the tracking and vertexing algorithms group at DØ  
 2009–2010 Co-leader of the muon momentum scale and resolution task force at DØ

## Invited Talks & Seminars

- Sep. 22, 2009 “ $WW$  Production at DØ” seminar at Michigan State University  
 Apr. 28, 2009 “Diboson Production at the Tevatron” on behalf of the CDF and DØ Collaborations at the XVII Int. Workshop on Deep-Inelastic Scattering and Related Topics, Madrid, Spain  
 Oct. 31, 2006 “Limits on Anomalous  $WW\gamma$  and  $WWZ$  Couplings from DØ” on behalf of the DØ Collaboration at the Joint Meeting of Pacific Region Particle Physics Communities, Honolulu, HI  
 Apr. 23, 2006 “Measurement of the  $WW$  Production Cross Section and Anomalous Couplings in  $e^+e^-$ ,  $e^\pm\mu^\mp$  and  $\mu^+\mu^-$  Final States at DØ” at the APS Meeting

## Research Experience

- 2009–Present Searched for standard model  $WH \rightarrow \ell\nu bb$  production at Tevatron
- Multivariate techniques are used to separate a small signal from a large background
  - Aim to improve analysis sensitivity beyond the gain from increased luminosity
- 2005–2009 Measured  $WW$  cross section and set limits on anomalous  $WW\gamma$ ,  $WWZ$  couplings
- Highly optimized cut-based analysis lead to most precise measurement of  $WW$  cross section at time of publication
  - Two-dimensional kinematic distributions used to set most stringent  $WW$  decay based anomalous coupling limits
  - Simultaneous analysis of  $W\gamma$ ,  $WW$  and  $WZ$  final states yielded most stringent anomalous coupling limits from Tevatron
- 2001–2005 Measured efficiency of the DØ Central Track Trigger using  $Z \rightarrow ee$  events in data
- 2000–2001 Undergraduate research in hydrodynamics

## Community Outreach

- 2003–Present Frequent tour guide and “Ask a Scientist” volunteer for Fermilab and DØ visitors
- 2006–Present Regularly give interactive science demonstrations to K–12 school children
- Jun. 24, 2010 Presented an interactive science demonstration, “FUNDamental Physics,” during Fermilab’s *Bring Your Daughters and Sons to Work Day*
- Feb. 21, 2010 Created and presented an interactive science demonstration, “FUNDamental Physics,” for the Fermilab Open House
- Aug. 21, 2009 Performed a cryogenics show at Millennium Park in Chicago as part of *LabFest!*
- 2008–2009 Attended various *Science Chicago: LabFest!* events to run demonstrations and talk to the public about the research performed at Fermilab
- Jan. 17, 2009 Created and presented an interactive science demonstration, “The Physics of Spinning Toys,” for the Fermilab Open House
- Jan. 20, 2005 Judge at Chicago Public Schools Science Fair, Chicago State University